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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,005	03/07/2005	Luigi Agarossi	IT 020027	2248

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EXAMINER	
HERRERA, DIEGO D	
ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/527,005	AGAROSSI ET AL.	
	Examiner	Art Unit	
	Diego Herrera	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 March 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Specification

This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Claim 1 is objected to for not actively claiming the steps (i.e. a)inputting... b) processing... c) outputting...).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor

and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1,3-4, 7-11, and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giallorenzi et al. (US 7190683), and in view of Soong et al. (US 20030179727).

Regarding claim 1. (original) Method for supervising an OFDM wireless communication system including a MAC layer and a PHY layer (Giallorenzi et al., col. 4 lines: 10-17, teaches interface with MAC and PHY layer), said PHY layer including a supervisor unit, wherein:

a) a first set of input data comprising a Target_Rate (paragraph [0036], Soong et al.) and a Target_BER (paragraph [0065] and [0066], Soong et al. teaches base station sets channel quality and the target BER) is inputted into the supervisor unit; and

b) the first set of input data is processed by the supervisor unit (Soong et al. teaches base station setting up threshold or target BER); and

c) a code rate C and a set of codes M = {Mi} for specifying constellations for sub-channels are outputted from the supervisor unit (col. 7 lines: 51-53, Giallorenzi et al. teaches using binary channel coding technique, gray-mapping is used for constellation).

Consider claim 3. (original) The method of Claim 2, Giallorenzi et al. teaches wherein, in case the starting information is the maximum transmit power and the

Target_BER, the processing of the first and second set of input data for minimizing transmission power in a wireless communication network system (col. 8 lines: 45-53) comprises:

a) calculating the maximum received power (col. 8 lines: 45-53, Giallorenzi et al. teaches power control protocol);

b) calculating the minimum SNR on the weakest sub-channel, for every number j of sub-channels considered and storing the result (col. 7 lines: 59-65, Giallorenzi et al. teaches SNR format for upstream and downstream are achievable using QPSK waveform depending of SNR results);

c) for every couple M/C, calculating the number of sub-channels having an SNR above the threshold yielding the BER requested by the MAC sub-layer (Soong et al. teaches threshold for communication, paragraph [0009], [0011], [0015], [0038]);

d) calculating the bit rate achievable using N(k,i) sub-channels (Giallorenzi et al. teaches bit rate achievable on a variety of frequency sub-channels col. 12 lines: 48-59);

e) finding the M/C (called (M,C)max) that yields the maximum bit rate(Soong et al. teaches threshold for communication, paragraph [0009], [0011], [0015], [0038]); and

f) selecting and outputting an "optimum" couple M/C (called (M, C)max) (abstract, Soong et al. teaches mobile dedicated power control sub-channel).

Consider claim 4. (original) The method of Claim 2, wherein, in case the starting information is the maximum transmit power and the Target_Rate, the processing

of the first and second set of input data for minimizing transmission power in a wireless communication network system comprises:

a) calculating the maximum receive power (col. 8 lines: 45-53, Giallorenzi et al. teaches power control protocol);

b) for every M/C, calculating the number of sub-channels used to achieve the bit rate Target_Rate (paragraph [0036], Soong et al. teaches about desired rate);

c) selecting the SNR on the worst sub-channel (paragraph [0052] and [0006], Soong et al. teaches it increases transmit power if the received SNR is less than the desired SNR);

d) calculated from the BER-SNR curve the BER corresponding to the worst sub-channel for modulation of k and code-rate l (paragraph [0065] and [0066], Soong et al. teaches base station sets channel quality and the target BER);

e) finding the M/C (called (M,C)min) that yields the minimum value (fig. 14, Soong et al. teaches curve with minimum and highest value); and

f) selecting and outputting an "optimum" couple M/C (called (M,C)min) (abstract, Soong et al. teaches mobile dedicated power control sub-channel).

Consider claim 7. (original) The method of Claim 6, wherein the processing of the first and second set of input data for minimizing transmission power in a wireless communication network system comprises:

selecting the best window position among the possible

ones:

(max_available N-(Nopt -1)) (col. 13 lines: 15-19, Giallorenzi et al. teaches available carriers); and

running the adopted TX power minimization algorithm on the selected window (col. 8 lines: 45-53, Giallorenzi et al. teaches power control protocol).

Consider claim 8. (currently amended) The method of Claim 1 comprising feeding the first set of input data as to the QoS requirements at the PHY layer from the MAC layer to the supervisor unit (Giallorenzi et al., col. 4 lines: 10-17, teaches interface with MAC and PHY layer);

feeding a second set of input data including channel power transfer functions H = {IHil2}: from PHY layer to the supervisor unit (paragraph [0041], Soong et al. teaches figure 3b with supervisor unit of energy-based link supervision);

processing the first and second set of input data for minimizing processing and transmission power in a wireless communication system (col. 8 lines: 45-53, Giallorenzi et al. teaches power control protocol);

outputting N, modulation, coding parameters and transmission power parameters to the PHY layer (col. 11 lines: 43-50, Giallorenzi et al. teaches PHY layer coding parameter and transmission power).

Consider claim 9. (original) The method of Claim 8, wherein the feeding of the first set of input data as to the QoS requirements at the PHY layer from the MAC layer to the supervisor unit comprises feeding a Max_Delay (paragraph [0041], Soong et al. teaches timer or limit of time for return of signal).

Consider claim 11. (original) The method of Claim 8, comprising outputting actual QoS data to the MAC layer (Giallorenzi et al. teaches on col. 4 lines: 10-17, MAC layer being enable to the QoS data).

Consider claim 14. (currently amended) The method of claim 11, wherein the outputting of actual QoS data to the MAC layer (Giallorenzi et al. teaches on col. 4 lines: 10-17, MAC layer being enable to the QoS data) additionally comprises, depending on the Feedback mode request from MAC layer, outputting:

a MAC return comprising a Max available Rate or

a Min available BER is provided after the optimization processing (paragraph [0065] and [0066], Soong et al. teaches base station sets channel quality and the target BER).

Consider claim 15. (currently amended) The method of claim 1, wherein the processing of the first and second set of input data for minimizing processing and transmission power in a wireless communication network system comprises finding N, the M/C couple and the ON sub-channels required to fit the Target_rate and the Target_BER requirements with the minimum power, given the current channel condition (Soong et al. teaches threshold for communication, paragraph [0009], [0011], [0015], [0038]).

Consider claim 16. (original) The method of claim 15, wherein, in case the channel conditions prevent achieving the required QoS even with the maximum available transmission power the supervisor algorithm finds the M/C couple, the number and the position of the ON sub-channels required to get

the Maximum Rate compatible with the Target_BER requirement, given the current channel condition and the maximum power allowed by the system specifications (paragraph [0065] and [0066], Soong et al. teaches base station sets channel quality and the target BER), or

the Minimum BER compatible with the Target_Rate requirement, given the current channel condition and the maximum power allowed by the system specifications (paragraph [0065] and [0066], Soong et al. teaches base station sets channel quality and the target BER).

Consider claim 17. (currently amended) An OFDM wireless communication system including a MAC layer and a PHY layer, said PHY layer including a supervisor unit, wherein the supervisor unit is configured to perform method of claim 1 (Giallorenzi et al., col. 4 lines: 10-17, teaches interface with MAC and PHY layer).

Consider claim 18. (currently amended) A supervisor unit in an OFDM wireless communication network system including a MAC layer and a PHY layer including said supervisor unit (paragraph [0041], Soong et al. teaches figure 3b with supervisor unit of energy-based link supervision), wherein the supervisor unit is configured to perform the method of claim 1.

Consider claim 19. (currently amended) An interface unit in an OFDM wireless communication system including a MAC layer and a PHY layer, said PHY layer including a supervisor unit, said interface being located between the supervisor unit and the MAC layer, wherein said interface unit is configured to perform method of claim 1 (Giallorenzi et al., col. 4 lines: 10-17, teaches interface with MAC and PHY layer).

Consider claim 20. (currently amended) A computer-readable medium containing a computer-readable program for use in an OFDM wireless communication system including a MAC layer and a PHY layer, said PHY layer including a

supervisor unit, wherein the program, when implemented in the supervisor and run in the supervisor unit, causes the supervisor to perform the method of claim 1 (Giallorenzi et al., col. 4 lines: 10-17, teaches interface with MAC and PHY layer).

Allowable Subject Matter

Claims 2, 5, 6, 12 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Diego Herrera whose telephone number is (571) 272-0907. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Diego Herrera
Patent Examiner

LESTER G. KINCAID
SUPERVISORY PRIMARY EXAMINER